The Annals of Clinical & Analytical Medicine
Original Research

A hospital based survey on the pattern of eye diseases in Arar, Saudi Arabia

Mujeeb Ur Rehman Parrey[1], Farhan Khashim Alswailmi[2]
[1]Faculty of Medicine; Northern Border University, Arar;
[2]Faculty of Applied Medical Sciences, University of Hafr Al-Batin, Hafr Al-Batin, Kingdom of Saudi Arabia

Abstract

Aim: In this study we aimed to evaluate the pattern of eye diseases (PED) in people attending a government hospital in Arar city of Saudi Arabia. Material and Method: This study was carried out on 1238 people visiting the eye out patient department (OPD) of Arar Central Hospital. Anterior and posterior segment eye examination was done to diagnose the eye diseases and treat them accordingly. Results: A total of 620 (50.1%) males and 618 (49.9%) females were enrolled in the current study whose ages ranged from 6 months to 72 years (39.8±2.9 years). Majority of the patients (95.3%) were Saudi nationals. In this study conjunctivitis was found to be the most common eye disease in 392 (31.7%) cases followed by refractive error, cataract, diabetic retinopathy and strabismus in 259 (20.9%), 183 (14.8%), 99 (8%) and 38 (3.1%) cases respectively. Discussion: The results of this study indicate that men and women are equally interested to seek medical advice for their eye diseases. Strategies should target to reduce the burden of refractive errors, cataract and diabetic retinopathy. Availability of posterior segment subspecialists and pediatric ophthalmologists in the hospital are important for better outcomes of cases with diabetic retinopathy and strabismus.

Keywords

Cataract; Conjunctivitis; Diabetic Retinopathy; Eye Diseases; Refractive Error; Strabismus.

DOI: 10.4328/ACAM.6210 Received: 18.02.2019 Accepted: 23.03.2019 Published Online: 27.03.2019 Printed: 01.05.2020 Ann Clin Anal Med 2020;11(3):216-220
Corresponding Author: Mujeeb Ur Rehman Parrey, Department of Surgery, Faculty of Medicine, P.O. Box: 1321, Northern Border University, Arar, KSA.
GSM: 00966504127126 E-Mail: drparrey@gmail.com
ORCID ID: https://orcid.org/ 0000-0002-2731-5438

Introduction

The diseases related to the organ of vision may have a serious impact on the quality of life. The pattern of eye diseases (PED) varies from country to country and within different geographical locations of the same country. These variations in PED mainly depend upon the facilities of available eye care services, socioeconomic development of the area and lifestyle of the individual. Some eye diseases like orbital cellulitis can cause life threatening complications, some like refractive errors can cause visual impairment and some others like conjunctivitis may have no or least impact on the visual acuity. The PED also varies among children, adults and elderly people.

Hospital based studies have been conducted in some countries to highlight the pattern of eye diseases [1-4]. While some studies have focused on the pattern of ocular morbidity in children [5-7] other researchers have studied the PED in elderly age groups [8-10].

In Saudi Arabia the main health care provider is the Ministry of Health through its government hospitals and other health centers. A limited data is available on the PED that are commonly encountered in the eye clinics of the government hospitals. One retrospective study has evaluated the common eye diseases in children attending the eye clinic of Prince Mohammed Bin Nasser Hospital, Jazan; Saudi Arabia [11]. Other studies have mainly focused on the prevalence and causes of visual impairment either in the adults [12,13] or in the children [14,15].

Studies pertaining to the PED are important to build better infrastructure for eye care facilities to meet the requirements and adequately deliver eye care services to the people served by these facilities. These studies also provide vital data for the policy making, resource allocations and recruitment of qualified staff as per need of the hospitals and other health centers.

Therefore, this study was taken up to determine the pattern of eye diseases in people presenting to the eye OPD of Arar Central Hospital.

Material and Methods

This study was conducted in Arar city, for a period of nine months starting from March 2018. Certificate of ethical approval (reference number 40/49/61) under the project name 7482-MED-2017-8-F was obtained from the university local bioethics committee. Informed consents were taken from 1238 participants of all ages who had willingly agreed to participate in this study. The consent was sought from a legal guardian in case the participant was below the age of 16 years. Ethical standards were maintained in all steps of this research project in accordance with the ethical standards of the Deanship of Scientific Research, Northern Border University; Kingdom of Saudi Arabia and also with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Study design; This study was conducted from 15th. March 2018 to 15th December 2018 at the eye OPD of Arar Central Hospital. After obtaining personal data and detailed history each participant was subjected to comprehensive eye examined by the research team. The research team comprised of ophthalmologists, optometrists and ophthalmic nurses each two in number. The examination protocol included visual acuity testing, examination of the pupil and ocular motility, slit lamp examination, tonometry, refraction and fundus examination. Data were collected and changed to percentages using the Microsoft excel 2016 version.

Results

Total 1238 patients had attended the ophthalmology OPD of Arar central Hospitals during the period of this study. The attendants included 620 (50.1%) males and 618 (49.9%) females with mean age of 39.4 years and standard deviation of 21.3 years with ages ranging from 6 months to 72 years. Data regarding ages, genders and nationalities of the attendants are shown in tables 1 and 2.

Regarding the anatomical site of the pathology in the diagnosed cases, conjunctiva was the commonest site to be affected (33.8% of the attendants) followed by the cornea (23.3% of the attendants). Other data for the anatomical site of the eye diseases among the participants are shown in table 3.

The data pertaining to the diagnosis of the participants are shown in table 4. The top five eye diseases diagnosed in the studied participants were conjunctivitis, refractive error (RE), cataract, diabetic retinopathy (DR) and strabismus in 31.7%, 20.9%, 14.8%, 8% and 3.1% attendants respectively. Allergic conjunctivitis was found to be the most common pathology of the conjunctiva. Esotropia was the commonest type of strabismus in the studied patients.

Table 1. Demographic data of the patients.

Parameters		<18		18-40		41-60		>60		Total	
		%	n	%	n	%	n	%	n	%	n
Gender	Males	152	24.5	183	29.5	153	24.7	132	21.3	620	100
	Females	163	26.4	162	26.2	180	29.1	113	18.3	618	100
Nationality	Saudi	300	25.4	317	26.9	319	27.0	244	20.7	1180	100
	Non-Saudi	15	25.9	28	48.3	14	24.1	1	1.7	58	100

Table 2. Nationality wise distribution of the patients

Nationality	Number	Percent
Saudi	1180	95.32
Egyptian	19	1.53
Sudanese	6	0.48
Indian	5	0.40
Pakistani	9	0.73
Syrian	2	0.16
Bangladeshi	8	0.65
Filipino	4	0.32
Jordanian	2	0.16
Indonesian	3	0.24

Table 3. Pattern of eye diseases in relation to the anatomical site of the disease.

Anatomical site	Number	Percent
1. Conjunctiva	418	33.8
2. Cornea	289	23.3
3. Lens	211	17
4. Retina and optic nerve	132	10.7
5. Eye lid	93	7.5
6. Ocular motility disorder	38	3.1
7. Related to different anatomical structures	24	1.9
8. Lacrimal	24	1.9
9. Uvea	5	0.4
10. Sclera	4	0.3

Data regarding the distribution of eye disease in relation to ages and genders of the participants are shown in table 5. Regarding gender distribution of eye diseases, conjunctivitis was more common in males [46.2% (287/620)] while RE was more common among in females [30.2% (187/618)]. Considering participants ages, conjunctivitis was the commonest [45.5% (300/660)] pathology seen in participants aged below 40 years while as RE was the commonest disorder in those aged above 40 years [27.3% (158/578)]. Regarding nationalities, conjunctivitis was the commonest pathology among Saudi patients while RE was the commonest among non-Saudi attendants (Table 6). In addition, conjunctivitis, DR and strabismus were more common among males, while as RE and cataract were more common among females. Regarding ages, conjunctivitis was the commonest eye disease in attendants aged below 40 years. RE was more common in attendants aged below 60 years and cataract was more common among participants aged above 60 years (Table 6).

Table 4. Diagnosis data of the patients.

Eye lid		
Blepharitis	30	2.4
Hordoelum externum	27	2.1
Chalazion	14	0.8
Bell's palsy	6	0.5
Ptosis	5	0.4
Eyelid mass	4	0.3
Trichiasis	4	0.3
Hordeolum internum	3	0.2
Conjunctiva		
Conjunctivitis	392	31.7
Pterygium	20	1.6
Sub-conjunctival hemorrhage	6	0.5
Sclera		
Episcleritis	4	0.3
Cornea		
Refractive error	259	20.9
Keratitis	10	0.8
Keratoconus	7	0.5
Post Lasik	6	0.4
Corneal opacity	7	0.5
Uvea		
Anterior uveitis	5	0.4
Lens		
Cataract	183	14.8
Pseudophakia	25	2
Aphakia	3	0.3
Lacrimal system		
Congenital nasolacrimal duct obstruction	12	0.9
Chronic dacryocystitis	8	0.6
Acute dacryocystitis	4	0.3
Retina and optic nerve		
Papilledema	2	0.2
Age related macular degeneration	10	0.8
Optic atrophy	9	0.7
Diabetic retinopathy	99	8
Glaucoma	12	1
Ocular motility disorder		
Strabismus	38	3.1
Disease related to different anatomical structures		
Amblyopia	19	1.5
Ocular Trauma	5	0.4

Table 6. The top five diagnosed diseases in relation to the nationality variables.

Variables Diagnosis	Nationality				Totals	
	Saudi		Non-Saudi			
	n	%	n	%	n	%
Conjunctivitis	388	99	4	1	392	100
RE	234	90.3	25	9.7	259	100
Cataract	179	97.8	4	2.2	183	100
DR	94	94.9	5	5.1	99	100
Strabismus	37	97.4	1	2.6	38	100

Discussion

This study was taken up to determine the pattern of eye diseases in people presenting to the eye OPD of Arar Central hospital. Total 1238 patients were enrolled during the months of the current study. According to the anatomical site of the diseases among the diagnosed cases, conjunctiva and cornea were the commonest sites to be affected (57% of the attendants). Conjunctivitis, RE, Cataract, DR and strabismus were the top five diagnosed eye diseases. Regarding gender distribution of eye diseases, conjunctivitis was the commonest among males (46.2%) while RE was more common among females (30.2%). Considering participants ages, conjunctivitis was the commonest pathology (45.5%) in attendants aged below 40 years, whiles RE was the commonest disorder (27.3%) in attendants aged above 40 years. Regarding nationalities, conjunctivitis was the commonest pathology among Saudi patients while RE was the commonest among non-Saudi attendants. In addition, conjunctivitis, DR and strabismus were more common among males, while as RE and cataract were more common among females. Regarding ages, conjunctivitis was the commonest eye disease in attendants aged below 40 years, while as RE was the commonest in attendants aged below 60 years and cataract was more common among participants aged above 60 years.

This study shows almost equal attendance rates for both males and females to the ophthalmology outpatient clinic which means that both genders are equally aware of the eye diseases and their importance to be diagnosed and managed properly. There was more percentage of Saudi participants as most of the non-Saudis are usually covered by health insurance companies which mainly deal with the private sec-

Table 5. The top five diagnosed diseases in relation to the age and gender variables.

Variables Diagnosis	Gender				Ages (years)								Totals	
	Male		Female		<18		18-40		41-60		>60			
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Conjunctivitis	287	73.2	105	26.8	182	46.4	118	30.1	54	13.8	38	9.7	392	100
RE	72	27.8	187	72.2	42	16.2	59	22.8	85	32.8	73	28.2	259	100
Cataract	81	44.3	102	55.7	12	6.6	12	6.6	54	29.5	105	57.4	183	100
DR	54	54.5	45	45.5	0	0	3	3.0	41	41.4	55	55.6	99	100
Strabismus	22	57.9	16	42.1	26	68.4	7	18.4	3	7.9	2	5.3	38	100

tor hospitals.

Conjunctivitis with its different types, especially the allergic type was the commonest diagnosis among attendants during the study months. This observation may be because of windy, dusty and dry weather conditions [16-18]. In line with our results, conjunctivitis was the most commonly reported eye disease in a hospital based study conducted by Olukorede et al. [19]. In addition conjunctivitis was more common in males below the age of 40 years which is in accordance with other studies [20, 21].

Refractive errors were the second most common eye disorder in the present study, while as the cataract was the third common diagnosis. RE was reported to be the second commonest cause of visual impairment (VI) in Arar by Parrey and Alswelmi (2017) [12] and leading cause of VI in nearby Aljouf area by Al-Shaaln et al (2011) [13]. However, both these studies did not consider conjunctivitis as they had focused only on the eye diseases causing visual impairment. The percentage of RE cases in our hospital based study was 21% of the enrolled cases, which is lower than other published papers reporting the prevalence of RE to be ranging from 26% to 40.8% [1,10,22]. In the current study, RE was more common among females with more prevalence of hyperopia, which is in line with the other studies [23,24].

Cataract was the third common pathology diagnosed in the enrolled cases with more prevalence among elderly due to higher incidence of senile cataract. This is in line with other studies [25,26]. In addition cataract was more common among females which is in accordance with previously published data [27,28].

Diabetic retinopathy was the fourth commonest diagnosed eye disease, which is expected as Saudi Arabia is one of the leading countries having more prevalent DM all over the world [29,30]. DR is highly prevalent as a complication of DM among Saudi people and it is a leading posterior segment cause of visual impairment among Saudi people [31,32]. DR was more common among males and elderly people. This is expected as DR is more common with more duration of the disease. In addition, smoking is more common among males which is also considered as one of the risk factors for DR [33].

Strabismus was the fifth most common diagnosis. Esotropia was the commonest type which is in line with Curtis et al. (2010) data regarding strabismus in Saudi Arabia [34]. The high incidence of strabismus in our study is in line with the other studies related to vision screening among school children in Saudi Arabia [35, 36]. These higher rates of strabismus among Saudi children may be due to higher prevalence of consanguinity due to more common marriage among relatives of the same families [37-39].

The main limitation of the current study is that the Arar Central Hospital is not the only referral place for ophthalmology cases in Arar city. Hence, the patients who might have attended to other hospital in Arar city (Price Abdulaziz bin Mosaad Hospital) and also the primary health care centers during the current study period have not been a part of this study. However, the enrolled sample size is highly representative for the current situation of eye disease among people in Arar city.

Conclusion

The awareness about eye morbidities is almost equal among both genders and all age groups in Saudi Arabia. Conjunctivitis, RE, cataract, DR and strabismus are the leading causes of eye morbidities. Awareness should be improved among general population for conjunctivitis, refractive error, diabetic retinopathy and strabismus.

Scientific Responsibility Statement

The authors declare that they are responsible for the article's scientific content including study design, data collection, analysis and interpretation, writing, some of the main line, or all of the preparation and scientific review of the contents and approval of the final version of the article.

Animal and human rights statement

All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. No animal or human studies were carried out by the authors for this article.

Funding: None

Conflict of interest

None of the authors received any type of financial support that could be considered potential conflict of interest regarding the manuscript or its submission.

References

1. Bharadwaj, M., Singh, L., & Dutt, B. (2017). A hospital based eye health survey to see the pattern of eye diseases in Uttarakhand, India. Int J Res Med Sci. 2017; 5(2):548-550.
2. Maake MM, Oduntan OA. Prevalence and causes of visual impairment in patients seen at Nkhensani Hospital Eye Clinic, South Africa. Afr J Prim Health Care Fam Med. 2015;7(1):728.
3. Thevi T, Basri M, Reddy S. Prevalence of eye diseases and visual impairment among the rural population - a case study of temerloh hospital. Malays Fam Physician. 2012;7(1):6-10.
4. Patel M., Mahyavanshi D., Nayak S., Patel A., Patel B & Darji H. Pattern of ocular morbidity in patients attending ophthalmic OPD at tertiary care hospital, Valsad, Gujarat. International Journal Of Community Medicine And Public Health. 2018; 5(2):569-573.
5. Mehari ZA. Pattern of childhood ocular morbidity in rural eye hospital, Central Ethiopia. BMC Ophthalmol. 2014;14:50.
6. Singh V, Malik KPS, Malik VK, Jain K. Prevalence of ocular morbidity in school going children in West Uttar Pradesh. Indian J Ophthalmol. 2017;65(6):500-508.
7. Nepal BP, Koirala S, Adhikary S, Sharma AK. Ocular morbidity in schoolchildren in Kathmandu. Br J Ophthalmol. 2003;87(5):531-4.
8. Reitmeir P, Linkohr B, Heier M, Molnos S, Strobl R, Schulz H; et. al. Common eye diseases in older adults of southern Germany: results from the KORA-Age study. Age and ageing. 2017;46(3):481-486.
9. Lee PP, Feldman ZW, Ostermann J, Brown DS, Sloan FA. Longitudinal prevalence of major eye diseases. Arch Ophthalmol. 2003;121(9):1303-10.
10. Singh MM, Murthy GV, Venkatraman R, Rao SP, Nayar S. A study of ocular morbidity among elderly population in a rural area of central India. Indian J Ophthalmol.1997;45(1):61-5.
11. Darraj A, Barakat W, Kenani M, Shajry R, Khawaji A, Bakri S; et al. Common Eye Diseases in Children in Saudi Arabia (Jazan). Ophthalmol Eye Dis. 2016;8: 33-9.
12. Parrey MU, Alswelmi FK. Prevalence and causes of visual impairment among Saudi adults. Pak J Med Sci. 2017;33(1):167-171.
13. Al-Shaaln FF, Bakrman MA, Ibrahim AM, Aljoudi AS. Prevalence and causes of visual impairment among Saudi adults attending primary health care centers in northern Saudi Arabia. Ann Saudi Med. 2011;31(5):473-480.
14. Tabbara KF, El-Sheikh HF, Shawaf SS. Pattern of childhood blindness at a referral center in Saudi Arabia. Ann Saudi Med. 2005;25(1):18–21.
15. Al Faran MF. Prevalence of ocular disorders among schoolboys in five villages in Al-Baha region. Ann Saudi Med. 1992;12(1):3–7.
16. Adeoye AO, Omotoye OJ. Eye disease in Wesley Guild Hospital, Ilesa, Nigeria. Afr J Med Med Sci. 2007; 36(4):377-80.
17. Nwosu SNN. Ocular problems of young adults in rural Nigeria. Int Ophthalmol. 1998;22:259-63.
18. Amadi AN, Nwankwo BO, Ibe AI. Common ocular problems in Aba metropolis of Abia State, eastern Nigeria. Pak. J. Soc. Sci. 2009;6:32-5.
19. Olukorede O. Adenuga, Oluyinka J. Samuel. Pattern of Eye Diseases in an Air Force Hospital in Nigeria. Pak J Ophthalmol. 2012;28(3):144-148.
20. Rosario N, Bielory L. Epidemiology of allergic conjunctivitis. Current opinion in allergy and clinical immunology. 2011;11(5):471-6.
21. Kumah DB, Lartey SY, Yemanyi F, Boateng EG, Awuah E. Prevalence of allergic conjunctivitis among basic school children in the Kumasi Metropolis (Ghana): a community-based cross-sectional study. BMC ophthalmology. 2015;15(1):69.
22. Haq I, Khan Z, Khalique N, Amir A, Jilani FA, Zaidi M. Prevalence of common ocular morbidities in adult population of aligarh. Indian J Community Med. 2009; 34(3): 195–201.
23. Bourne RR, Dineen BP, Ali SM, Huq DM, Johnson GJ. Prevalence of refractive error in Bangladeshi adults: results of the National Blindness and Low Vision Survey of Bangladesh. Ophthalmology. 2004;111(6):1150-60.
24. Vitale S, Ellwein L, Cotch MF, Ferris FL, Sperduto R. Prevalence of refractive error in the United States, 1999-2004. Arch ophthalmol. 2008;126(8):1111-9.

25. Kini MM, Leibowitz HM, Colton T, Nickerson RJ, Ganley J, Dawber TR. Prevalence of senile cataract, diabetic retinopathy, senile macular degeneration, and open-angle glaucoma in the Framingham eye study. Am J Ophthalmol. 1978;85(1):28-34.
26. Prokofyeva E, Wegener A, Zrenner E. Cataract prevalence and prevention in Europe: a literature review. Acta Ophthalmologica. 2013;91(5):395-405.
27. Wagoner MD, al-Rajhi AA. Ophthalmology in the Kingdom of Saudi Arabia. Arch Ophthalmol. 2001;119(10):1539-43.
28. Christen WG, Liu S, Glynn RJ, Gaziano JM, Buring JE. Dietary carotenoids, vitamins C and E, and risk of cataract in women: a prospective study. Arch Ophthalmol. 2008;126(1):102-9.
29. Al-Nozha MM, Al-Maatouq MA, Al-Mazrou YY, Al-Harthi SS, Arafah MR, Khalil MZ; et. al. Diabetes mellitus in Saudi Arabia. Saudi Med J. 2004;25(11):1603-10.
30. Whiting DR, Guariguata L, Weil C, Shaw J. IDF diabetes atlas: global estimates of the prevalence of diabetes for 2011 and 2030. Diabetes Res Clin Pract. 2011;94(3):311-21.
31. Al Ghamdi AH, Rabiu M, Hajar S, Yorston D, Kuper H, Polack S. Rapid assessment of avoidable blindness and diabetic retinopathy in Taif, Saudi Arabia. Br J Ophthalmol. 2012;96(9):1168-72.
32. Hajar S, Al Hazmi A, Wasli M, Mousa A, Rabiu M. Prevalence and causes of blindness and diabetic retinopathy in Southern Saudi Arabia. Saudi Med J. 2015;36(4):449-55.
33. Yau JW, Rogers SL, Kawasaki R, Lamoureux EL, Kowalski JW, Bek T, et. al. Global prevalence and major risk factors of diabetic retinopathy. Diabetes Care. 2012;35(3):556-64.
34. Curtis TH, McClatchey M, Wheeler DT. Epidemiology of surgical strabismus in Saudi Arabia. Ophthalmic epidemiology. 2010;17(5):307-14.
35. Bardisi WM, Bin Sadiq BM. Vision screening of preschool children in Jeddah, Saudi Arabia. Eye Care Review. 2008 1;2(1).
36. Al-Rowaily MA. Prevalence of refractive errors among pre-school children at King Abdulaziz Medical City, Riyadh, Saudi Arabia. Saudi J Ophthalmol. 2010;24(2):45-48.
37. Bagheri M, Farvardin M, Saadat M. A study of consanguineous marriage as a risk factor for developing comitant strabismus. J Community Genet. 2015; 6(2):177-180.
38. Engle EC. The genetic basis of complex strabismus. Pediatr Res. 2006;59(3):343-8.
39. El-Mouzan MI, Al-Salloum AA, Al-Herbish AS, Qurachi MM, Al-Omar AA. Regional variations in the prevalence of consanguinity in Saudi Arabia. Saudi Med J. 2007;28(12):1881-4.

How to cite this article:
Rehman Parrey MU, Alswailmi FK. A hospital based survey on the pattern of eye diseases in Arar, Saudi Arabia. Ann Clin Anal Med 2019; Ann Clin Anal Med 2020;11(3):216-220